

**Skagit Flood Control  
& Ecosystem  
Restoration Study  
Coordination Meeting**

16 April 1996  
1:00 PM  
Skagit County Courthouse, Mount Vernon  
Hearing Room C

**MEETING NOTES**

*FINAL*

Attendees:

Harvey Wolden	Skagit County Commissioner, District #2 {part time}
David Brookings	Skagit County, Manager, Surface Water Management
Larry Wasserman	Skagit System Cooperative, Director, Environmental Services
Bob LaRock	Skagit System Cooperative, Water Quality Coordinator
John Wiseman	Mount Vernon, City Engineer
Dan Eisses	Mount Vernon, Project Engineer
Gus Tjeerdsma	Burlington, Mayor
Richard Smith	Diking District #3
Leonard Halverson	Representative, Specially Affected Areas
John Thompson	Representative, Upriver Communities
Forest Brooks	COE, Study/Project Manager
Steve Foster	COE, Chief, Planning Branch
Mike Scuderi	COE, Environmental Coordinator
Noel Gilbrough	COE, Study Manager (92-94)

# Agenda

1. Purpose of Meeting	Forest Brooks	
2. Sponsor(s) Expectations for Ultimate Project	Dave Brookings/Larry Wasserman	
3. Desired Project Features	Dave Brookings/Larry Wasserman	
4. Local Study & Project Funding Capability & Timing	Dave Brookings/Larry Wasserman	POSTPONED TO NEXT MEETING
5. Status of Lawsuit--Impact on Study	Dave Brookings	POSTPONED TO NEXT MEETING
6. Review of Study Plan Tasks (Responses to Questions & Comments Previously Provided by Skagit County)	Forest Brooks	POSTPONED TO NEXT MEETING
7. Composition/Role of Study Executive Committee	Forest Brooks	POSTPONED TO NEXT MEETING
8. Composition/Role of Study Technical Team	Forest Brooks	POSTPONED TO NEXT MEETING
9. "What Tasks Need to be Done Next"	Brooks/Brookings/Wasserman	
10. Assignment of "To Do" Items & Timing	Brooks/Brookings/Wasserman	
11. Schedule/Agenda for Next Meeting	Brooks/Brookings/Wasserman	

## Additional Information

Proposed Study Limit:	The area to be considered for flood control and ecosystem restoration improvements is that portion of the Skagit River flood plain lying downstream of the upstream limits of Sedro Wolley and would include consideration of the Nookachamps/Clear Lake/Sterling area as well as protection of Stanwood from project designed Skagit overflow flooding.
Concerns Raised:	In the past, the upriver communities have felt they were forgotten by the rest of Skagit County. Based on the results of prior studies, it doesn't appear there are significant projects in the upriver area. What can probably be done would involve improved flood warning and response and some floodproofing and/or relocation. The Feasibility Study (FS) should address the upriver area in some way. The FS could fill two current voids: (1) complete the Management Plan for the area by identifying possible projects, and (2) develop policies regarding the upriver flooding problems. The FS should screen the possible projects in the upriver area and spin-off any apparent projects into other Corps, FEMA, or WDE programs. The study should complement and help the state's requirement for FCAAP Comprehensive plan. Further definition of the study area is required and should be a topic at a future meeting.

### Purpose of Meeting

Forest Brooks

The primary purpose of the meeting was to clarify Corps' understandings about sponsor's expectations and then begin working on the study details. Before the Corps of Engineers works with the County to rescope the study, we need to clearly understand what the Local Sponsor(s) hope to get out of the study/project process, including both flood control and ecosystem restoration features. How much are potential Local Sponsors willing to commit to this study? How much are the Local Sponsors willing to pay for "the project"? What work needs to be done to plan and design the project so that Congressional authorization for construction can be obtained?

The following were the expectations of the attendees for what a feasibility study should be or do:

Dave Brookings, Skagit County Surface Water Management:

1. A well thought out plan of attack to construct "the plan".
2. A solid hydraulic model to use for decision making
3. A feasibility study leading to a single plan covering both construction and management activities.
4. A maximum study time of three years
5. A maximum study cost of \$2.5 to \$3.0 M (Federal and Non-Federal).
6. Consideration of the entire basin and prioritization of needs.
7. Goals for flood protection.
8. Information necessary to meet FCAAP requirements.

Larry Wasserman, Skagit System Cooperative:

1. Provide 25-year protection for agricultural lands with greater protection for urban areas.
2. Complete the fisheries scoping after some basic project parameters are determined (i.e., level of protection for urban and rural areas, location of overtopping areas, etc.).
3. Design project in a way so that flooding that occurs will not damage fisheries or fishery habitat or preclude restoration of significant habitat areas in the future.
4. Better flood warning.
5. Accommodate the SSC in an assistance role.
6. Focus the ecosystem elements of the study in the lower basin.

John Thompson, Upriver Communities:

1. Consider upriver community needs.
2. Design the model to predict changes caused by logging debris, erosion, and sedimentation so it can be used in future river management.
3. Make the model user-friendly and easy-to-update with current conditions so it can be used by the County to predict future flooding during the events.
4. Upriver farmers need help with bank erosion and rocking of banks to save their farms.
5. Lyman & Hamilton need help with recurring flood damages.

John Wiseman, Mount Vernon:

1. Separate any plan into logical segments so that parts can be developed independently if "the plan" gets stalled again.
2. Look at relocation of State Highway 20 combined with diking improvements.
3. Look at incorporating other purposes such as recreation trails.

Gus Tjeerdsma, Burlington:

1. Look at upriver communities.
2. Identify weak points in the levee system.
3. Look at the current Burlington proposal to provide set-back dikes that form an off-river storage area and improvements to Gages Slough.
4. Burlington is moving ahead in acquiring land purchase agreements with landowners covering the dike/pond areas.

Leonard Halvarson, Nookachamps/Sterling:

1. Sterling and Nookachamps need help with low water problems
2. Logging restrictions along the river have allowed solid rows of cottonwoods to grow up --These should be replaced with spruce and cedar to improve the habitat.
3. Smaller floods are held up at two bottlenecks:
  - a. Just above the BNRR bridge {1' drop}

b. Opposite NE end of District #12, Strawberry Bar has restricted channel down to about a 360' channel width causing a 3.5' drop in water surface upstream. Leonard suggested cutting the cottonwood trees on Strawberry Bar and replacing them with grass to drop flood water surfaces in the Sterling/Nookachamps areas by about 3'.

FOLLOWING THE MEETING (5/14) LEONARD PROVIDED ADDITIONAL INFORMATION THAT CLARIFIED AND EXPANDED ON HIS COMMENTS AT THE MEETING:

1. Project must include relief for Sterling and Nookachamps areas and maximum protection for the city of Burlington. This can only be achieved by widening the river corridor between the BNRR bridge and the I-5 bridge. The goal should be to achieve the greatest flow possible through this reach with water excess to downstream channel capacity to be carried over the levee by an overtopping section at the Avon Bend with those waters being carried to Padilla Bay in the natural flow channel. {1922 Herzog Report indicated 90,000 cfs must be overtopped in this area during a 100-year event.}
2. The channel must also be widened at the Mount Vernon bridge with additional overtopping segments at Fir Island.
3. There is little benefit in having an overtopping segment on the Mount Vernon side of the river.
4. Skagit County must adopt a policy of river bed clean-up and care, including gravel bar scalping, clearing of log jams, removal of man-made structures, etc. Areas of concern below Sedro Wolley include:
  - A. Old RR bridge at SR 9
  - B. Widen the river at Strawberry Point and the District 12 Wing Dike. River is only 360' wide from dike to timber on south side. In small flood (1995), this constriction backs 3.5' of water to Lafayette Road, over Sterling and Francis Roads. It fills Sterling and Nookachamps, flooding into Beaver Lake, using a large amount of valley storage well before major flood stages are reached.
  - C. Remove the riprap obstruction above the BNRR bridge between Mount Vernon and Burlington. This raises the flood level 1.5' in a small flood (Nov. 1995).
  - D. Upgrade the BNRR bridge to provide more channel and overbank capacity.
  - E. Remove cement piles from the old Interurban Railroad.
  - F. Replace the old 99 highway bridge.
  - G. Widen I-5 highway bridge to provide maximum practical channel capacity.
  - H. Remove riprap from the middle of the river at Avon Bend.
  - I. Widen the bridge corridor at Mount Vernon.
  - J. Widen the North Fork bridge and the boat launch area.
  - K. Improve the South Fork.
  - L. Consider removing the jetty at the mouth of the North Fork
5. The Skagit County Flood Control Committee is about to form a sub-committee to address up-river needs, including bar and log jam removal and cottonwood problems.
6. There should be a flood gate constructed in Nookachamps Creek at SR 9 to stop the flooding of the Beaver Lake and the Clear Lake areas.
7. Maximum flood control storage should be obtained in Upper Baker and Ross Dams.
8. We need the best hydraulic study available to determine flow paths from overtopping areas and cumulative impacts of placing fill in the flood plain.

Harvey Waldon, Skagit County Commissioner

1. Get study done ASAP -- Shorten to 3 year study
2. Need to cover as much of basin as possible -- Must consider up river communities.
3. Don't develop a project so large it requires a vote of the citizens of Skagit Co -- stay within the limit of the Commissioner's authority.

Action items: All participants were asked to confirm their expectations in writing to the Corps so we can verify that we correctly understand what their expectations are.	Person responsible: All	Deadline: May 3
All participants should also review the expectations others have stated and identify any problems they foresee or concerns they may have over implementing others expectations.	All	May 3

Desired Project Features Dave Brookings/Larry Wasserman

Discussion:

Dave Brookings saw the ultimate project would be driven by \$\$\$\$ {Federal and non-Federal}. The Federal \$\$\$ are driven by finding a favorable Benefit-to-Cost ratio. The Benefit-to-Cost-ratio is driven by the levels of protection. The study costs are driven by the selection of the hydraulic model(s). We made a list of expectations for the model with the understanding that all expectations would not be met, but all would be considered and we would attempt to cost out each option.

The group's ideas of what they thought the hydraulic model should do or be capable of doing, or what the model should address follow:

1. Handle and define depth/velocity/extent of overbank flows {what happens to the water when the levees overtop}.
2. Evaluate the effects of set-back dikes
3. **Include the impact of tidal fluctuations on the flood water surface profiles.**
4. Determine the frequencies associated with each of the overflow scenarios and locations.
5. Ability to provide close to real-time data based on input of actual rainfall and runoff observations during a flood event.
6. Easy-to-update and user-friendly for staff of local governments.
7. Able to be used to provide flood warning predictions during a flood event.
8. Accuracy of the overbank water surface profiles should be between 6" and 1' --"Model should provide information accurate enough to build to".
9. As part of the analysis study should provide all the information required to update the FEMA FIRM and Floodway maps.
10. The flood overflow into the Samish {and overflow to Stanwood} should be defined to the same extent and level of accuracy as the rest of the flood plain.
11. If overtopping occurs, when and where does the interior drainage {and the overflow water} get out into the bays.
12. What is the effect of changed land use and future new construction on water surface profiles in the main channel and the overbank [Evaluation of cumulative impacts].
13. The effect of erosion of the channel/banks, deposition in channel, sedimentation, etc needs to be evaluated.
14. Easily determine the impacts of dredging segments of the channel.

Conclusions:

Further discussion of the hydraulic model, its capabilities, and costs is necessary.

Action items: Detailed discussion of the hydraulic model(s) will happen at the next meeting. Dave will set up a panel by inviting hydraulic engineers from Snohomish County and A/E's. Corps Hydrologic personnel will attend. Prior to the meeting information for discussion will be developed and distributed.	Person responsible: Dave Brookings Forest Brooks	Deadline: 30 April
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Summary of "To Do" Items & Timing	Brooks/Brookings/Wasserman	
<p>Action items:</p> <p><u>Clarification of Expectations</u> -- as discussed above all will review their expectations as understood by the Corps and revise and/or update for clarity prior to the next meeting.</p> <p><u>Definition of Study Area</u> -- Whether or not the upriver area will be included in the study and, if so, to what level of detail will work be carried needs to be better clarified. All need to consider this question and whether there is time and money to solve some or all the upriver problems?</p> <p><u>Funding Constraints</u> -- Skagit County, the SSC, Burlington, Mount Vernon, and the diking and drainage districts should review their possible funding sources and determine what reasonable upper limits exist for the funds which they would be able to contribute to a study and/or project.</p> <p><u>Hydraulic Model(s)</u> -- as discussed above, all will review the expectatations for the hydraulic model(s) and provide revisions or corrections to their desires for the model and comments or questions about those provided by others</p> <p>Corps &amp; Skagit County will put together a panel to discuss the hydraulic model(s) to help determine how much model is responsible to pay for.</p>	<p>Person responsible:</p> <p>ALL</p> <p>ALL</p> <p>Skagit County Skagit System Cooperative Mount Vernon Burlington Diking &amp; Drainage Districts</p> <p>ALL</p> <p>Corps &amp; Skagit County</p>	<p>Deadline:</p> <p>May 3</p> <p>May10</p> <p>May 10</p> <p>May 3</p> <p>May 14</p>
<p>Schedule/Agenda for Next Meeting</p> <p style="text-align: right;">Brooks/Brookings/Wasserman</p>		
<p><u>Discussion:</u></p> <p>Next meeting was set for Tuesday 14 May 1996 at Skagit County</p> <p>Agenda for the meeting will cover:</p> <ol style="list-style-type: none"> <li>1. Clarification of Expectations for the Study/Project</li> <li>2. Clarification of Area to be Studied</li> <li>3. Identification of Funding Constraints</li> <li>4. Hydraulic Model(s) -- Capabilities and Costs</li> <li>5. Other items held over from this meeting</li> </ol>		

## MEMO FOR PARTICIPANTS

16 APRIL 1996

SUBJECT: MEETING ON BURLINGTON FLOOD HAZARD REDUCTION PLAN.

1. A meeting was held on the morning of 16 April 1996 in the City of Burlington's Council Chambers to discuss the flood hazard reduction plan for Burlington that would involve set-back levees, off-river storage, and improvements to Gages Slough. Enclosure 1 is the attendance list for this meeting.
2. Newly elected Mayor Gus Tjeerdsma, a long time resident of Burlington, is very committed to do what he can do to provide leadership in reducing flood damages in his city. He recognizes that Burlington will probably never get 100-year level of protection and is willing to settle for good flood warning and evacuation planning, whatever additional flood protection is reasonable, and improved drainage to remove the flood waters as soon as possible during and following an event.
3. Margaret Fleek, Planner for Burlington presented the proposed plan to provide a set back levee system along the Skagit River at Burlington to provide a second line of defense, to allow for some valley storage of flood waters, and to improve drainage in Gages Slough. Recently, Burlington held meetings with residents along Gages Slough. The residents do not want any radical changes from the current conditions they experience. Gages Slough is currently a series of "pretty ponds", but residents would like to get the water moving and not be as stagnant as it is now. The upper (east) end of the Slough is about 9 feet above the water in the adjacent Hart Slough off the main Skagit River, so feeding the east end of Gages Slough by gravity from the Skagit River is not feasible. To augment flow through the Slough, water would have to be pumped across Highway 20. However, the water in Hart Slough is not considered by the agencies to be good for improving fishery habitat in Gages Slough.
4. The primary concept of their proposed plan is for the set-up levees to serve as a short-term back-up in case the riverside levees are overtopped. They will store water for a short time until they also are overtopped. During most of the year the ponding area between the levees could be used for recreational activities. The key is that Burlington does not expect 100-year protection from this plan, but does see it as a second line of defense to buy a few hours of time for residents to move what they can and then get out. This second levee would allow some water to pond temporarily if the river front levee was overtopped. This pondage could reduce the flood crest height for a time and provide a short period of time for residents of Burlington to protect their property from an impending flood and evacuate. The filling of this "valley storage" could be either by overtopping of the river levee or by opening an inlet structure to allow a more controlled filling. The effect of this storage on the flood elsewhere in the Skagit Delta would depend on when in the flood the storage was used. Early use could help the Nookachamps/Sterling area reduce their flooding somewhat.
5. The Burlington Plan also involves the improvement of conveyance of water in Gages Slough. The SSC did not feel that Gages Slough provides good habitat for fisheries because of current residential and commercial development. With lawns going right down to the water's edge, fertilizer waste from lawns easily reaches the channel. Without riparian zones adjacent to the channel, the current large ponds may be too warm for fish during parts of the year. Improving the Slough may improve habitat but it still may not be appropriate to introduce trout or salmon, catfish may be better.
6. After much discussion a concensus was reached that Gages Slough would be used to convey local runoff and improve urban drainage, but should not be improved so as to provide flood control or accommodate trout or salmon. The Gages Slough part of the proposed plan will improve the culverts and road crossings to provide for at least 800 cfs flow. It was also suggested that, as road culverts and embankments were modified to improve the drainage, that consideration should also be made to modifying the embankments, railings, guardrails, etc. so that they would more easily pass floodwaters with little impact or could be removed during flood events to reduce water back-up and damages from the flooding.